Claims:

I claim:

1. A method of enhancing fluid velocity in a pipeline, comprising the step of: driving thruster pigs sequentially through a pipeline containing fluid at speeds in excess of that provided by a pressure system for the pipeline, such that the fluid is pushed by the thruster pigs and fluid is drawn by areas of low pressure created by the passage of the thruster pigs through the pipeline.

2. The method as defined in Claim 1, the speed of the thruster pigs being a multiple of the fluid speed provided by the pressure system for the pipeline, thereby multiplying the capacity of the pipeline.

3. The method as defined in Claim 1, the fluid in the pipeline being one of a liquid, a gas, a slurry or a fluidized solid.

4. The method as defined in Claim 1, container capsules being concurrently moved through the pipeline by the thruster pigs.

5. The method as defined in Claim 4, the thruster pigs being modified to serve as container capsules.

6. The method as defined in Claim 1, an electromagnetic thrust system being used to provide propulsion, guidance and suspension for the thruster pigs.

7. The method as defined in Claim 6, the electromagnetic thrust system including electromagnetic motors, the electomagnetic motors being one of linear synchronous motors, linear motors, linear induction motors, linear electrodynamic motors, and pulsed linear induction motors.

8. The method as defined in Claim 6, magnets being incorporated into the thruster pig.

9. The method as defined in Claim 8, the magnets being one of permanent magnets, electromagnets, induction magnets, and superconducting magnets.

10. The method as defined in Claim 6, the thruster pigs being one of rigid body, magnetorheological fluids (fluids that harden in the presence of a magnetic field and becomes liquid again when the magnetic field is removed), and ionized slugs of fluid.

11. The method as defined in Claim 6, the electromagnetic thrust system including coils on the pipeline.

12. The method as defined in Claim 11, the coils being configured in one of multi-layered, pancake, flate plate or diamond.

13. The method as defined in Claim 11, the coils incorporating ferromagnetic materials.

14. The method as defined in Claim 11, the coils being applied to an outside of the pipeline.

15. The method as defined in Claim 14, the coils being oriented in one of the following orientations: parallel to a longitudinal axis of the pipeline or fully encircling the pipeline perpendicular to the longitudinal axis of the pipeline.

16. The method as defined in Claim 11, the coils being embedded in a pipeline liner.

17. The method as defined in Claim 6, a power source being used that is one of alternating current or direct current.

18. The method as defined in Claim 17, the power source being provided by one of connecting to an electric power grid or by generating the appropriate power adjacent to the pipeline.

19. The method as defined in Claim 18, a combination of transformer(s), rectifier(s), chopper(s) and inverter(s) being used to condition the power from the power source to provide multi-phased, variable voltage, variable frequency power.

20. The method as defined in Claim 11, a switching system being incorporated into the coil system such that energization of the coils is done in such a manner as to appropriately propel / suspend / hold the thruster pigs and minimize power consumption.

21. The method as defined in Claim 6, an electromagnetic holding zone is provided to load the thruster pigs into the pipeline while preventing fluid flow through the holding zone.

22. The method as defined in Claim 1, the thruster pigs being driven for a substantial distance along the pipeline.

23. The method as defined in Claim 1, the thruster pigs being driven only at selected locations where it is desirable to increase fluid velocity or pressure.

24. The method as defined in Claim 1, a thruster pig return line being provided.

25. An apparatus for enhancing fluid velocity in a pipeline, comprising in combination:
a pipeline having holding zone to load thruster pigs into the pipeline while preventing fluid flow through the holding zone and a separation zone in which the thruster pigs are removed from the fluid flow; and
means for driving thruster pigs sequentially through the pipeline containing fluid at speeds in excess of that provided by a pressure system for the pipeline, such that the fluid is pushed by the thruster pigs and fluid is drawn by areas of low pressure created by the passage of the thruster pigs through the pipeline.

26. The apparatus as defined in Claim 25, wherein the separation zone is connected to a thruster pig return line which returns the thruster pigs to the holding zone.

27. The apparatus as defined in Claim 25, wherein the thruster pigs are driven at speeds which are a multiple of a fluid speed provided by the pressure system for the pipeline, thereby multiplying the capacity of the pipeline.

28. The apparatus as defined in Claim 25, wherein an electromagnetic thrust system is used to provide propulsion, guidance and suspension for the thruster pigs.

29. The apparatus as defined in Claim 28, wherein the electromagnetic thrust system includes electromagnetic motors, the electromagnetic motors being one of linear synchronous motors, linear motors, linear induction motors, linear electrodynamic motors, and pulsed linear induction motors.

30. The apparatus as defined in Claim 28, wherein magnets are incorporated into the thruster pigs.

31. The apparatus as defined in Claim 30, wherein the magnets are one of permanent magnets, electromagnets, induction magnets, and superconducting magnets.

32. The apparatus as defined in Claim 25, wherein the thruster pigs are one of rigid body, magnetorheological fluids (fluids that harden in the presence of a magnetic field and becomes liquid again when the magnetic field is removed), and ionized slugs of fluid.

33. The apparatus as defined in Claim 25, wherein the electromagnetic thrust system includes coils on the pipeline.

34. The apparatus as defined in Claim 33, wherein the coils are configured in one of multi-layered, pancake, flate plate or diamond.

35. The apparatus as defined in Claim 33, wherein the coils incorporate ferromagnetic materials.

36. The apparatus as defined in Claim 33, wherein the coils are applied to an outside of the pipeline.

37. The apparatus as defined in Claim 33, wherein the coils are oriented in one of the following orientations: parallel to a longitudinal axis of the pipeline or fully encircling the pipeline perpendicular to the longitudinal axis of the pipeline.

38. The apparatus as defined in Claim 33, wherein the coils are embedded in a pipeline liner.

39. The apparatus as defined in Claim 28, wherein a power source used to power the electromagnetic thrust system is one of alternating current or direct current.

40. The apparatus as defined in Claim 39, wherein the power source is provided by one of connecting to an electric power grid or by generating the appropriate power adjacent to the pipeline.

41. The apparatus as defined in Claim 39, wherein a combination of transformer(s), rectifier(s), chopper(s) and inverter(s) are used to condition the power from the power source to provide multi-phased, variable voltage, variable frequency power.

42. The apparatus as defined in Claim 28, wherein a switching system is incorporated into the coil system such that energization of the coils is done in such a manner as to appropriately propel / suspend / hold the thruster pigs and minimize power consumption.

43. An apparatus for enhancing fluid velocity in a pipeline, comprising in combination:

a pipeline having holding zone to load thruster pigs into the pipeline while preventing fluid flow through the holding zone and a separation zone in which the thruster pigs are removed from the fluid flow, the separation zone being connected to a thruster pig return line which returns the thruster pigs to the holding zone;

an electromagnetic thrust system to provide guidance and suspension of the thruster pigs, the electromagnetic thrust system driving thruster pigs sequentially through the pipeline containing fluid at speeds which are a multiple of a fluid speed provided by a pressure system for the pipeline, the electromagnetic thrust system including coils on the pipeline which act upon magnets incorporated into the thruster pigs;

a switching system for selectively energizing the coils to propel the thruster pigs through the pipeline; and

a controllerfor controlling thruster pig velocities .